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Effect of Microvoids on the Shock Initiation of PETN.
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Livermore, CA. We have studied the shock initiation of
high-density PETN with and without microvoids, included
as glass microballoons with diameter less than 25
micrometer. Samples were prepared by pressing PETN
powder, pure and containing 9% microballoons by volume,
with acetone to achieve densities greater than 95% of the
theoretical maximum. We subjected the samples to one-
dimensional shocks of 1.7 - 2.8 GPa, and measured the
dynamic behavior of the shock traveling through the
sample with a series of *in-situ* manganin pressure gauges.
Pure PETN showed initiation behavior similar to that seen
in single crystals of PETN. The presence of microvoids
resulted in a slight increase in shock sensitivity at 2 GPa
when compared with the pure PETN samples, as shown by
a increased acceleration of the shock propagation velocity
and shock pressures. We also observed an unexpected
pressure release in pure PETN shocked to 2 GPa, that we
tentatively interpret as a shock-induced phase change.

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